

Stewardship Enterprise

“The land ethic simply enlarges the boundaries of the community to include soils, waters, plants and animals, or collectively: the land.”
- Aldo Leopold

Stewardship of the environment means ensuring that our natural resources are sustainably managed for current and future generations. The Department of Environment and Natural Resources is North Carolina’s lead stewardship agency and works hard to share the process, outcomes and ethics of stewardship through its work.

N.C. Christmas trees. Bill Russ, N.C. Tourism.



Forest Stewardship

In 2008, Henry Cantrell was certified by the Burke County Stewardship Committee as a forest steward. Cantrell, who owns 30 acres of forest land in Burke County, had been participating for four years in the N.C. Forest Stewardship Program. This program, run by the N.C. Division of Forest Resources with participation from several other natural resources organizations, assists landowners in managing their land and recognizes those landowners that work with natural resource professionals to improve the forest environment and adhere to a multiple-use concept of forest management.

Forest owners who are part of the program receive technical assistance in developing a stewardship management plan. The plan is based on the objectives of the landowner and provides a strategy for enhancing the forest for wildlife, soil and water quality, timber production, recreational opportunities and natural beauty. Since nearly 70 percent of North Carolina’s 18 million acres of forest land is privately owned, the Forest Stewardship Certification Program plays a critical role in ensuring the sustainability of this valuable resource.

Henry Cantrell, right, receives a forest steward award from Harry Jarrett, county forest stewardship chairman. N.C. Division of Forest Resources.

Oh, the Tonnage You’ll Save

In 2001, the Division of Pollution Prevention and Environmental Assistance developed the Environmental Stewardship Initiative. The mission of the program is to assist organizations in reducing their environmental impact beyond regulatory requirements and recognize those that achieve and maintain this commitment. The program is open to any site-specific, regulated organization or entity including manufacturers, businesses, government agencies, schools and nonprofit agencies. More than 100 members are now part of the program, and their collective reduced environmental impact and cost savings are quite impressive. From 2003 through 2006, participants saved more than \$23 million, reduced landfill waste by 201,420 tons (that’s the weight of 26,800 African elephants), reduced water use by 1,829,086,775 gallons (enough to fill 2,770 Olympic swimming pools), and reduced energy use by 169,414,198 MBtu (the equivalent of what more than 217,000 households in North Carolina use in one year).



In April 2008, Environmental Stewardship Initiative partner Burt’s Bees held a “Dumpster Day” event. For two weeks, trash bins were emptied and volunteers from the facility sorted the waste into three categories: what should have been recycled or composted, what could be recycled if they found the right outlet and what was truly trash for a landfill. As a result of this exercise, Burt’s Bees has reduced the amount of trash sent to a landfill from its facility by 50 percent. N.C. Division of Pollution Prevention and Environmental Assistance.

Protecting Coastal Habitats

The General Assembly set in motion the creation of the Coastal Habitat Protection Plan program within the Department of Environment and Natural Resources with its passage of the Fisheries Reform Act of 1997. The Act requires preparation of the Coastal Habitat Protection Plans, or CHPP, for critical fisheries habitats in the coastal area of the state. In December 2004 the CHPP was officially adopted by the Coastal Resources, Environmental Management and Marine Fisheries commissions. It focused on six basic fish habitats: water column, shell bottom, submerged aquatic vegetation (SAV), wetlands, soft bottoms and ocean hard bottom. A chapter is dedicated to each of these habitat types, each one including information on the description and distribution of the habitat, its ecological role and function, status and trends, threats and recommended management actions to deal with those threats.

Within the department, the divisions of Marine Fisheries, Water Quality and Coastal Management are the lead agencies for implementing the CHPP program. Once the CHPP had been adopted, these divisions, as well as the commissions, developed and adopted two-year implementation plans in 2005. These plans detail specific steps for divisions to take. The plans were organized by the four major goals of the CHPP: improve effectiveness of existing rules and programs protecting coastal fish habitats; identify, designate and protect strategic habitat areas; enhance habitat and protect it from physical impacts; and enhance and protect water quality.

The Department of Environment and Natural Resources has worked hard to accomplish many of the steps outlined in the implementation plans. SAV mapping and research is underway as is shellfish habitat mapping, and numerous education workshops have been held on coastal development rules and stormwater best management practices. More funding is going to oyster restoration and oyster shell recycling, and rule changes are being considered that will help protect critical marsh habitat. The achievements are numerous, but perhaps most importantly, the CHPP has facilitated more partnerships between environmental agencies and organizations, assisted agencies in identifying research needs and enhanced communication and cooperation among the department's divisions, enabling greater success for all.



Salt marshes on Bald Head Island. Natural Heritage Program.



Sowing Your Oats

The N.C. Aquarium at Fort Fisher led sea oat-planting projects in 2004 and 2005, to restore sand dunes that had washed away during previous storms. Sea oats capture wind-blown sand, creating the dunes that serve to protect Fort Fisher's state-owned natural areas and structures. *N.C. Division of Coastal Management.*

Firewise

In 2003, River Run Plantation in Brunswick County became the state's first Firewise Community. The Firewise Communities/USA program provides communities with knowledge and assistance in achieving fire readiness with the goal of minimizing damage to homes from an approaching wildfire. The N.C. Division of Forest Resources manages this national program in the state. Firewise coordinators with the division help communities assess their wildfire risks and take actions that will minimize those risks.

River Run Plantation had undeveloped, overgrown lots and was surrounded by heavily forested land. The history of wildfire in Brunswick County prompted the community to take action. Through working with the Division of Forest Resources and the local volunteer fire department, a Firewise Task Force was formed, potential fuel was removed from undeveloped lots, an emergency road exit was created and community members were educated about the program. River Run Plantation hoped its achievement would be an example to other small communities.

Eastern White Pine.

One Million Acres of Trees

The Division of Forest Resources' Forest Development Program was established in 1978 to encourage landowners to reforest their land by reimbursing them for some of the cost associated with doing so. In 2005, the program reached an impressive milestone – one million acres of trees planted. The landowner who planted the one millionth acre was Charles Royal, who grew loblolly pines on the acreage in Sampson County on which his great-grandfather used to grow cotton. "I think it's a great program," said Royal. "I think the incentive is there to motivate and entice you to replant acreage that you might not otherwise plant."

To understand the program's value, consider that one million acres of forestland:

- Would fit into an area about twice the size of Johnston County;
- Removes roughly six to 10 million tons of carbon dioxide each year;
- Produces four million tons of oxygen each year, enough for 18 million people to breathe;
- Can provide North Carolina landowners with more than \$800 million in timber harvest revenue;
- Produces enough lumber to build more than 500,000 homes.



Loblolly pine seedling being planted. Each year the Division of Forest Resources produces approximately 21 million seedlings. N.C. Division of Forest Resources.



Rarities

From Venus flytraps to the Rafinesque's big-eared bat — North Carolina is home to many rare species. The Department of Environment and Natural Resources works hard to identify and protect its rare species and ecosystems.

Hawksbill Sea Turtle

In March 2001, a juvenile hawksbill sea turtle was found stranded on the beach in Rodanthe. It was brought to the Network for Endangered Sea Turtles' (NEST) rehabilitation center at the N.C. Aquarium on Roanoke Island to recuperate. It was likely cold-stunned, as sea turtles are very susceptible to changes in water temperature. Hawksbill sea turtles, named for their bird-like beaks, are not usually found this far north. Fortunately, the stranded turtle had a speedy recovery and was released in May when the water was warmer.

Hawksbill sea turtle. Photo by Caroline Rogers, USGS.



Rare Golden Sedge

In 2002, the golden sedge (*Carex lutea*) was added to the federal endangered species list. Originally discovered in 1991, this rare plant is only found in Pender and Onslow counties in North Carolina. Biologists believe that the species relies on periodic fires in order to survive. Fire suppression has pushed the population into just a few tiny pockets.

Golden sedge. Misty Buchanan, N.C. Natural Heritage Program.



Saint Francis Satyr. Steve Hall, N.C. Natural Heritage Program.

Saint Francis Satyr Butterfly

The location is top secret. State and federal officials refuse to discuss it. Intrigue, mystery... butterflies! For many years, staff from the Natural Heritage Program have been conducting habitat and population studies of the Saint Francis satyr

butterfly. The only location on earth where this butterfly can be found is near the artillery zones at Fort Bragg. While a bombing zone might not seem like the best place for a federally endangered species of butterfly, it seems to work for the Saint Francis satyr.

Explosions aren't the only disturbances that the butterfly lives with, either. It appears that flooding from beaver dams and fires are two disturbances that this species may actually require for survival. It is hoped that the research currently being conducted will be able to be used to improve the habitat for this rare creature, which was actually thought to be extinct in the early 1990s. The researchers studying the Saint Francis satyr are truly dedicated, tromping through swamps in mid-summer hoping to catch a glimpse of the drab, brown butterfly, which only has distinctive markings on the underside of its wings and spends most of the day clinging to sedges. It lives on an Army base after all; of course it would be good at camouflaging itself!



Gray's lily.

Topographic, river basin, county, geologic, land use, climate...the list of the kinds of maps used by the Department of Environment and Natural Resources is long. Maps help delineate where unique ecosystems are located; help identify where certain environmental issues are likely to occur; and help department staff plan for future conservation efforts.

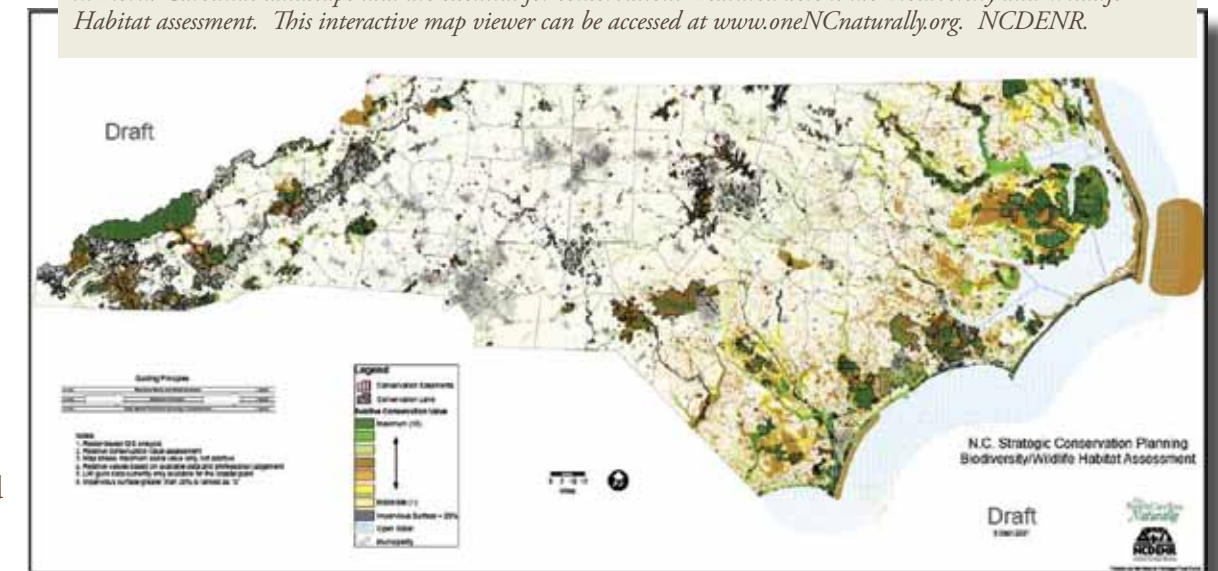
Mapping the Future of Conservation

One NC Naturally

The Department of Environment and Natural Resources established a comprehensive, visionary initiative in 2002 called One North Carolina Naturally, meant to implement strategies to promote conservation in the context of rapid development. One NC Naturally works in three sectors – natural areas, working lands and coastal habitats. A major goal of the overall program is to make conservation efforts in the state better coordinated and more effective.

At the first statewide conference planned through the initiative, Secretary Bill Ross introduced the need for a consolidated map that would guide conservation work and track progress. The map would help illustrate what was already being done and aid in determining how to connect and support those efforts, as well as fill in any gaps. The first step in creating such a map occurred in 2004, when local governments and private organizations were asked to use the technical and financial support of state government to develop plans and maps of existing protected spaces and future conservation opportunities. These regional plans would then be incorporated into the One NC Naturally map to show joint interests and encourage coordinated conservation. The interactive Conservation Lands Map Viewer was made available online in 2005.

The One NC Naturally Conservation Planning Tool streamlines the process of identifying and prioritizing the areas in North Carolina's landscape that are essential for conservation. Featured here is the Biodiversity and Wildlife Habitat assessment. This interactive map viewer can be accessed at www.oneNCnaturally.org. NCDENR.



In 2006, the Office of Conservation and Community Affairs in DENR began work on developing North Carolina's first green infrastructure plan: the Conservation Planning Tool. A year later it was released. The Conservation Planning Tool was designed to identify and prioritize the essential, high-quality natural resources across the state, as well as crucial land gaps that should be connected for a network of supporting ecosystems. The tool is available online as an interactive map viewer. At the time of its release, the tool included biodiversity and conservation land layers. Layers for agricultural and forestry lands, marine fisheries and estuaries as well as water sources will be added by the end of 2008. The One North Carolina Naturally initiative and the tools that have been developed as part of it will allow the hard work of all natural resource conservation organizations to go further, more efficiently, now and in the future.

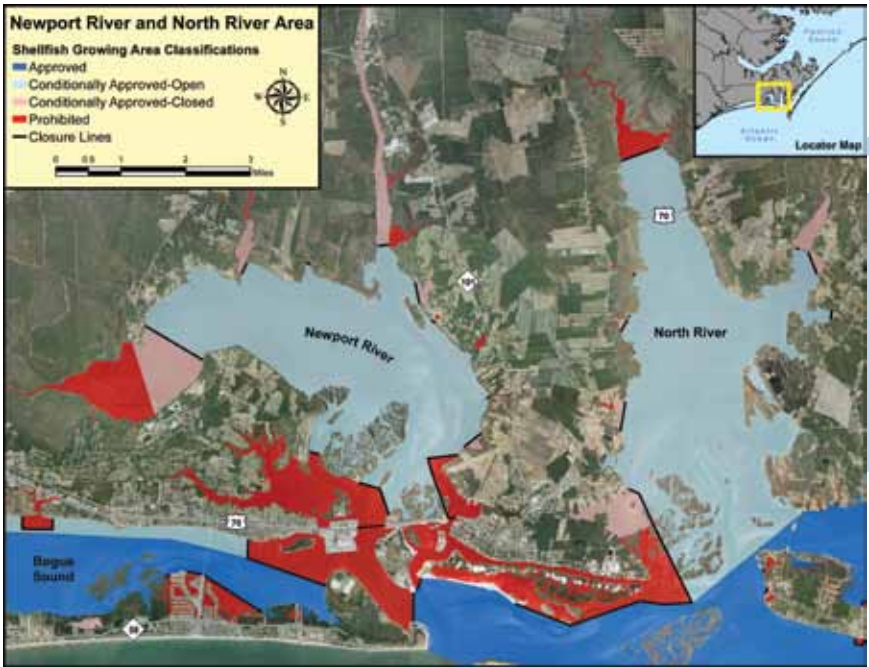


Find out if you live near any rare species such as this Schweinitz's sunflower. Misty Buchanan, N.C. Natural Heritage Program.

Mapping Specialties

Thanks to the Natural Heritage Program, North Carolinians can select any point in the state on a United States Geological Survey map and get a report of all of the rare species that are found within two miles.

Shellfish harvesting waters classifications for Newport and North River in Carteret County. N.C. Division of Environmental Health.



Surveying Shellfish Waters

Oysters are filter feeders, which is what makes them so good at cleaning up the water. It also means, however, that if an area suffers from too much pollution, the oysters and other shellfish in that area may not be safe to eat. It is the role of the Division of Environmental Health's Shellfish Sanitation and Recreational Water Quality Section to monitor and classify coastal waters as to their suitability for shellfish harvesting for human consumption. At the end of 2006, this group updated and improved how it accomplishes this task.

Previously, the shellfish closure maps were hand-drawn and accompanied by latitude and longitude descriptions of the closure areas. It was sometimes difficult to determine where exactly closure lines fell on these maps in relation to prominent landmarks, and they were not easily accessible. In 2006, the Shellfish Sanitation Section released electronic closure maps that had been created in cooperation with the divisions of Marine Fisheries and Coastal Management. "The updated shellfish closure maps and our Web site make it easier to share this information with harvesters and the public," said Patti Fowler, acting chief of the Shellfish Sanitation and Recreational Water Quality Section.

Runoff that flows down the storm drain goes directly to a nearby body of water, along with any pollutants it may be carrying. N.C. Division of Water Quality.



Stormwater Mapping

The question of who is in charge can have a multitude of answers when stormwater is involved. Stormwater permitting responsibility across North Carolina could be local, state, shared by multiple entities or not a requirement at all. Add this to the fact that watersheds don't follow municipal boundaries and that other states have their own state and local requirements and it's plain to see why stormwater requirements can be confusing, to say the least.

The Center for Geographic Information and Analysis collaborated with the Division of Water Quality in 2007 to develop the Stormwater Permit mapping tool. Using North Carolina's county boundaries as the base data, the custom layers represent all possible cases of stormwater permitting responsibility based on unique and overlapping jurisdictions and rules. The interactive map clarifies what rules apply anywhere in the state.

Marching In Step

It seems that the focus of the United States Armed Services and the N.C. Department of Environment and Natural Resources would not have much overlap, but the two organizations have partnered on many projects. The results have been extremely positive on both fronts.

Fort Macon Restoration

The Division of Parks and Recreation completed its restoration of the 168-year-old fort at Fort Macon State Park in 2003. It now features state-of-the-art interpretive exhibits for visitors to enjoy. It was one of the most extensive historical restoration projects ever to be completed in North Carolina.



Fort Macon State Park. N.C. Division of Parks and Recreation.



*Military training often requires large tracts of land remote from human development.
Photo courtesy of Marine Corps Base Camp Lejeune.*

Buffering the Edges

Most military installations were established and located away from population centers. As state populations grew, however, encroaching development became an issue for many installations. As more and more residential areas spring up near these military sites, the number of noise complaints rises. Sometimes increased nighttime lighting from neighboring communities makes it impossible for military units to train properly for nighttime combat. As the population in North Carolina has risen, military installation encroachment issues have risen as well.

The Department of Environment and Natural Resources often sees development encroachment as a problem for reasons different than those of the military. The department worries that areas that once served as wildlife habitat or riparian buffers are being developed. While the underlying reasons may be different, the department and the military have realized that by working together, land can be protected for both of their needs.

In 2002, for example, through the combined efforts of the Clean Water Management Trust Fund, the N.C. Natural Heritage Trust Fund, the Wildlife Resources Commission, The Nature Conservancy and Camp Lejeune, 2,500 acres next to Camp Lejeune were purchased for conservation. The land had been slated for residential development and a golf course. The tract includes a “sandhill seep” habitat – one of the rarest natural habitats of our state. It is home to carnivorous Venus flytraps and pitcher plants as well as the endangered Carolina goldenrod. The N.C. Wildlife Resources Commission owns and operates the property, but Camp Lejeune retains limited rights to train on the land. It’s truly a win for the Marines and wildlife.

Mapping Out the Defense

In December 2004, Fort Bragg’s 20th Engineer Brigade was preparing to go to Iraq for the daunting task of helping to rebuild Iraqi infrastructure such as bridges, roads and pipelines. The brigade contacted the N. C. Geodetic Survey, requesting technical assistance on how to establish a spatial reference system for Iraq.

Although it is possible to build small, isolated structures without accurate and precise coordinates, the job of reconstructing a neighborhood, let alone a nation’s infrastructure, definitely required precise and accurate coordinates. A spatial reference system provides the land-surveying foundation essential for building modern bridges, laying pipelines across vast featureless distances and constructing roads efficiently. The system also provides the geographic information system (GIS) foundation for mapping existing and rebuilt infrastructure components in order to help prioritize reconstruction.

Upon receiving the request from the brigade, Geodetic Survey staff went to Camp Mackall at Fort Bragg to meet with the brigade’s surveyors and leaders to discuss what assistance would be needed. The agency then prepared and conducted a two-day training session for the brigade on how to use GPS land surveying techniques, set geodetic monuments and establish GPS base stations. Perhaps most important was the continued support that the Geodetic Survey provided to the brigade via e-mail during the brigade’s deployment.

On June 6, 2006, the U.S. Army, National Geodetic Survey and N.C. Geodetic Survey unveiled a stainless steel commemorative geodetic disk in a dedication ceremony to honor their cooperative spirit and the dedicated individuals who participated in establishing the Iraqi Geospatial Reference System. This monument to their effort can be seen next to the control tower at the Camp Mackall airfield.



*The commemorative geodetic disk located next to the camp Mackall airfield control tower.
N.C. Division of Land Resources.*

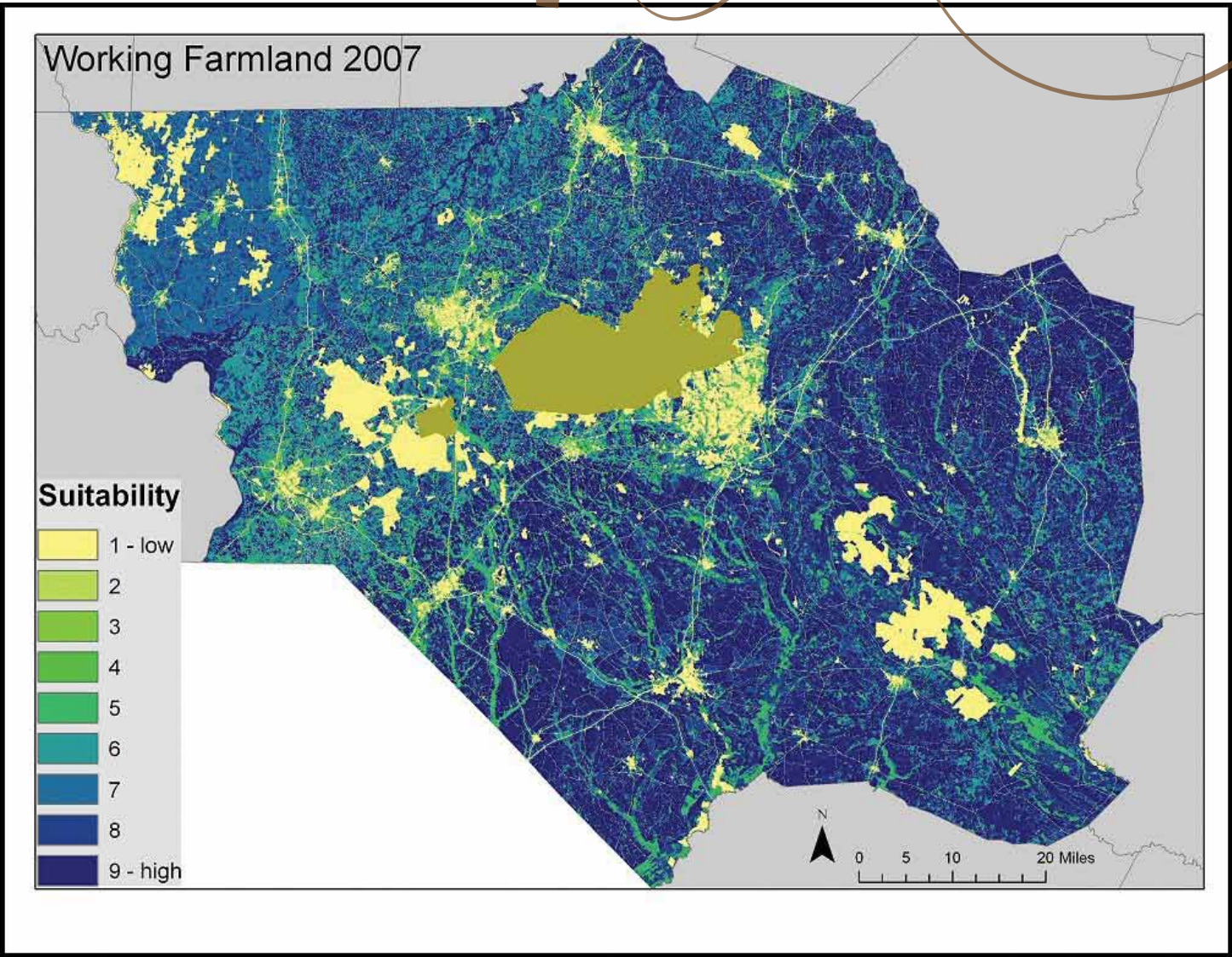
Following the brigade’s return to Fort Bragg, the U.S. Army presented the N.C. Geodetic Survey with a certificate of appreciation. It reads:

“In appreciation for the North Carolina Geodetic Survey’s vital support to the 20th Engineer Brigade (Combat) (Airborne Corps). Their unparalleled patriotism and outstanding ability to provide technical assistance were vital to the realization of the Iraqi Geospatial Reference System. Their actions are in keeping with the finest traditions of civil service to our nation and reflect distinct credit upon them, this command, and the United States Army.”

Sustainable Sandhills

In 2002, Col. Tad Davis, Fort Bragg’s garrison commander, met with Department of Environment and Natural Resources Secretary Bill Ross about a vision for a sustainable region within North Carolina’s Sandhills. The result was the innovative Sustainable Sandhills Initiative – a partnership between Fort Bragg, the department and the eight counties abutting the military installation. The initiative works to ensure long-term sustainability in the region through work in six program areas: awareness and education, eco-tourism, green business, green design, land planning and recycling.

A map showing the potential for working farmland in the 11-county Sustainable Sandhills region. Dark blue is the highest farmland suitability.





The Everyday

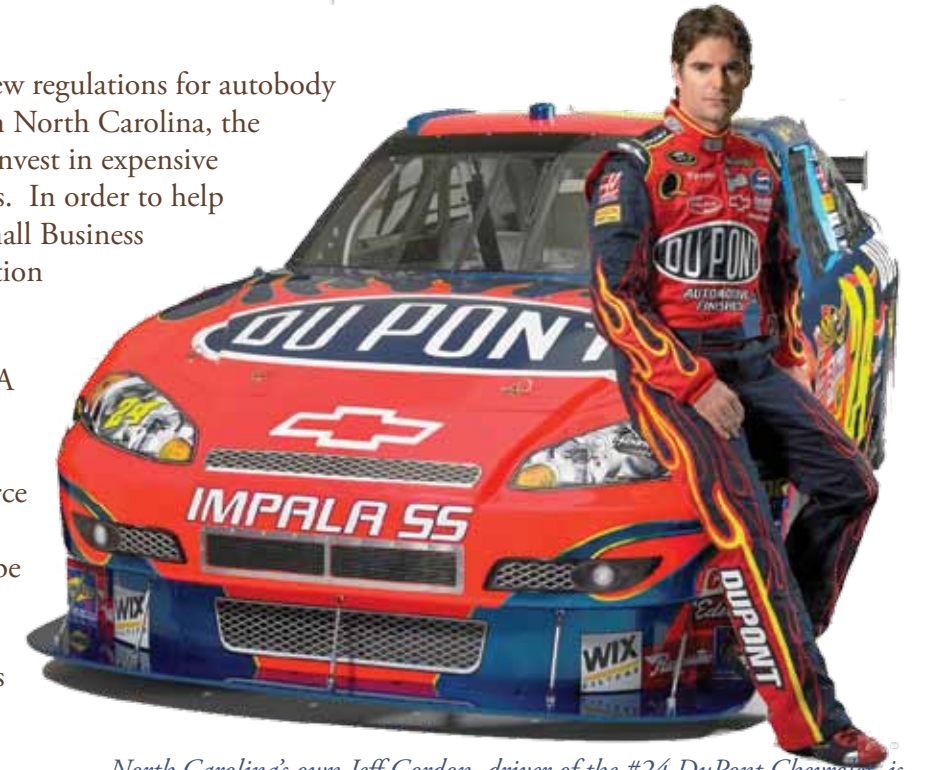
Everything we do each day has impacts on natural resources. Brushing our teeth, walking the dog, cooking dinner...the connections are not always right on the surface, but all of our decisions, purchases and actions affect natural resource use somewhere down the line. Below are some examples of how Department of Environment and Natural Resources staff are involved behind-the-scenes with activities we all do, and how they are working to educate people about the issues surrounding the choices made each day.

Serving Small Businesses

In 2008, the Environmental Protection Agency came out with new regulations for autobody shops. While the rules applied equally to all 2,000+ businesses in North Carolina, the compliance burden was greatest for small businesses that had to invest in expensive equipment and provide specialized training to all of their painters. In order to help the small business community, the Customer Service Center's Small Business Environmental Assistance Program designed outreach and education programs for shop owners and staff.

The center produced a training DVD in partnership with the EPA and used local North Carolina autobody shops for filming in order to provide realistic examples of operations in small shops. Center staff also worked with the Hispanic Chamber of Commerce to create Spanish versions of the DVD. NASCAR driver Jeff Gordon also participated to help promote the DVD, which will be used nationwide.

The confidential, compliance assistance role of the Small Business Environmental Assistance Program enables the Customer Service Center staff to work closely with individual business owners and trade associations. By working together, they can develop industry-appropriate permit training and guidance materials. "Many of my clients employ family members and live in the community where their business is located," said SBEAP's lead engineer, Tony Pendola. "The last thing they want to do is emit unhealthy levels of pollutants. They just need some help learning how to keep from doing it. Once they understand the benefits, they are generally eager to do what is needed."



North Carolina's own Jeff Gordon, driver of the #24 DuPont Chevrolet, is featured in the autobody DVD. The four-time NASCAR Cup Series champion encourages shops to reduce air pollution and keep their communities safer. Photo courtesy of Jeff Gordon Inc.

Auto Inspections

We all take our cars in for annual safety inspections, and for many of us in North Carolina this annual event also includes emissions testing. Most of us don't think about the pollution that results from driving our cars, but that is the job of the Division of Air Quality. In 2002, North Carolina made a major change in the way it tests motor vehicle emissions. Instead of measuring pollutants coming from cars' exhaust pipes, the state began using cars' own computers to determine whether their air pollution controls were working properly. This built-in system, called on-board diagnostics (OBD), continuously monitors vehicle performance and helps identify problems when a vehicle fails an inspection. From 2002 to 2006, DAQ, in cooperation with the N.C. Division of Motor Vehicles, expanded the emissions inspection program for cars and light-duty trucks. The emissions testing program expanded from nine to 48 counties during the four-year period, so that more than 80 percent of North Carolina's vehicles are now subject to inspections.

"The auto emissions inspection program is a key part of our efforts to reduce ozone, which is North Carolina's most widespread air quality problem," said DAQ Director Keith Overcash. "Cars and trucks account for about half of the ozone-forming emissions statewide, so it's important that vehicles' emissions controls are working properly." More than half of North Carolina's residents live in counties where ozone levels exceed the standard. DAQ is working hard to improve air quality and protect the health of all North Carolinians.

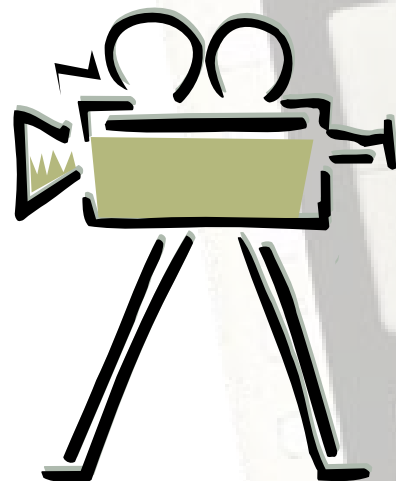


The Division of Air Quality's Otto Parts cartoon character helps educate the public about the importance of emissions testing for cars and trucks. N.C. Division of Air Quality.

Be Smart. Buy Smart. Know Your Choices

The Office of Environmental Education launched its Informed Consumer Initiative in 2006. This new adult education program was aimed at educating the public about issues surrounding the purchases and actions that are part of their everyday lives. This initiative covers topics such as food, lawn and garden, energy, water, waste, household products and personal care products. The information and resources provided as part of the initiative are not meant to advocate for any particular choice, but rather let people know what choices are out there and the costs and benefits associated with them. The interest in and popularity of the initiative has led to new components, including presentations to community groups, an Eco-Smart Consumer blog, informed consumer news RSS feeds and several educational publications.

“Initially we were trying to reach more of the adult public through our Web site,” said Rachel Golden Smith of the Office of Environmental Education. “Most people do not identify themselves as the ‘general public,’ but almost all people identify themselves as ‘consumers.’ The Informed Consumer Initiative does not aim to tell people what they should or should not buy or where they should or should not shop. It just highlights many of the environmental issues surrounding our everyday purchases and actions as consumers. In following the basis of environmental education, it does not tell people what to think or do. It instead gives people all of the resources they need to make their own informed decisions.”



Pumpkin patch at a North Carolina farmer’s market. Bill Russ, N.C. Tourism.

Lights, Camera, Action

EUE Screen Gem Studio in Wilmington was about to expand its facility with a new sound stage that would include one of the largest indoor production tanks in North America. They had a chance to lock-in several large contracts, but only if they could start construction immediately. Thanks to Express Permit Review through the Department of Environment and Natural Resources Customer Service Center, they could.

Express Permit Review was established as a pilot program in 2004 and expanded statewide in 2006. It provides faster review of permits, but does not relax requirements. The quicker process is possible through an expansion of staff supported by higher permit fees, requiring high-quality applications and emphasizing clear communication between all parties involved through pre-application meetings.

Screen Gem Studio was able to get the necessary coastal stormwater permit processed in only nine days, compared to the 60 to 90 days it would have taken otherwise. The studio is the largest full-service motion picture facility east of California, providing income and jobs to the Wilmington area. The Express Permit Review system has been a way that the department can ensure environmental protection while also ensuring stability for North Carolina’s economy and businesses.



Know what’s grosser than picking up dog poop?

Stepping in it. Know what’s even grosser than that? Swimming in, fishing from, and drinking water that has dog poop in it! Please pick up after your pooch.

Cleaning up pet waste is good for your health and the environment! Seriously. Pet waste left on the ground gets washed into storm drains and drainage ditches that flow to your local waterway...without being treated! Bacteria, parasites and viruses found in pet waste can be harmful to water quality and human health. Not only is picking up after your pooch the neighborly thing to do, it's the healthy thing to do... for you and the environment!

N.C. Department of Environment and Natural Resources
This sign was funded through the Clean Water Act's Section 319 Grant Program.

Thank you!



For more information, please visit
www.eenorthcarolina.org

Pet waste pick-up signs created by the N.C. Office of Environmental Education.

In 2007, the Office of Environmental Education had pet waste signs created and has been distributing them to department agencies, other state facilities and North Carolina Environmental Education Centers free of charge. Look for them at any of North Carolina’s Department of Transportation rest areas with pet waste stations.

A Dirty Job

Studies had shown that most people in North Carolina did not realize that water flowing down the storm drain does not get treated before it flows into local waterways. Many people are also not educated about potential sources of stormwater contamination. Pet waste, especially in heavily populated areas with a lot of impervious surfaces, can have a negative impact on water quality. Only about one third of dog owners in North Carolina claimed that they usually picked up after their dog on walks.

In 2006, as part of its Informed Consumer Initiative, the Office of Environmental Education developed postcards that provided information about the water quality impacts of not picking up after pets. “I didn’t want to create a postcard and just have it handed out to everyone only to be thrown away,” said Rachel Golden Smith with the Office of Environmental Education. “I know most dog owners trust their vet and value their input, so I really wanted to have vets distributing the postcards.” The postcards were initially sent to more than 800 vets across the state along with a letter inviting vets to order more postcards for free to distribute to their clients. As of 2008, vet clinics alone have requested more than 16,000 postcards, and more than 80,000 postcards have been requested overall. Groups commonly requesting the cards include homeowners’ associations, parks, pet shelters, nature centers and many other organizations.

“We’ve had lots of other states contact us to get the digital files of the postcard to produce their own version,” said Smith. “I even had a woman working with a stormwater program in Puerto Rico who wanted the card to translate into Spanish!” The popularity of the pet postcards prompted the office to seek funding to produce signs for pet waste stations. “There are more and more locations providing pet waste bags and disposal receptacles,” said Smith, “yet the signs available to accompany the receptacles often do not tell people why picking up pet waste is important. Making pet waste receptacles available and telling people why they are important to use, for better water quality of their own local waters, will make individuals more likely to use them.”

ABCs

Experiencing and learning about the environment and natural resources of North Carolina is a lifelong endeavor. Many of the agencies in the Department of Environment and Natural Resources provide resources to classroom teachers in the form of professional development, classroom outreach, curricula and student mentoring.

Orange urchins such as this were collected during the "Life on the Edge" missions on which the N.C. Museum of Natural Sciences invited teachers to participate. Photo by Art Howard.

An "A" in Recycling

The Division of Pollution Prevention and Environmental Assistance has worked to increase recycling participation by schools through recycling workshops, curriculum workshops and school bin grants. In 2006, more than 68 local governments reported that they had a school recycling program. On average, each of these programs diverts three pounds of material from landfills per student per month.

The Recycle Guys have helped teach about recycling in North Carolina's schools. N.C. Division of Pollution Prevention and Environmental Assistance.



Sound Learning

Twenty-two elementary teachers and media coordinators participated in a weeklong training experience in 2005 that introduced them to a new way of teaching their school curriculum using environmental education.

The "Sound Learning Institute" was made possible by funding from the Albemarle-Pamlico National Estuary Program to the Environmental Education Fund and was administered by the Office of Environmental Education. The institute was a collaborative effort of multiple government agencies, nonprofit organizations, environmental education centers and universities to bring environmental education skills and resources to North Carolina's teachers. Sarah Palmer, a teacher at Raleigh's Wiley International Magnet Elementary, was one of the workshop attendees.

Going to the Sound Learning Institute kick-started my earlier, vague attempts to be an environmental educator. When Carolyn Toben did her activities to awaken our childhood experiences with nature, then told us we were probably the last generation who had that, I got a real jolt and decided, 'over my dead body will MY students not have intimate experiences with nature!' I've been eagerly grabbing every environmental education (EE) experience I can possibly have time/energy for ever since, both for the benefit of my students (and many other children I know), as well as my extreme enjoyment! I've learned so much about North Carolina's environment and general environmental knowledge and teaching skills and opportunities. I'm doing a 2,000+ square foot native plants natural learning garden at my school so our kids have a wild place to just be, and also to learn formally. In July I'm going to the RESTORE institute in Madison, Wis., to learn about restoring native ecosystems on school campuses and creating research-based curriculum for them. The contact for that was made at an Environmental Educators of North Carolina conference – I've been networking my little heart out, and reaping great results for my own edification and my students' benefit. In my classroom, I throw in environmental stuff as much as I possibly can, and many kids are starting to see me as the 'Ms. Frizzle' of nature – they bring me bugs, birds hit by cars, egg shells, weird nature stuff. I LOVE EE, and it has really added a wonderful spark to my life as a teacher and person in the world.



Teachers explore our state's coastal habitat at the Sound Learning Institute. Office of Environmental Education.

A Zoo of a School

Ribbon-cutting ceremonies were held for the Asheboro High School Zoo School in September 2007. Located on the zoo grounds, the school is a science-focused program for 100 students in grades ten, eleven and twelve. It is only the fourth such school in the country.

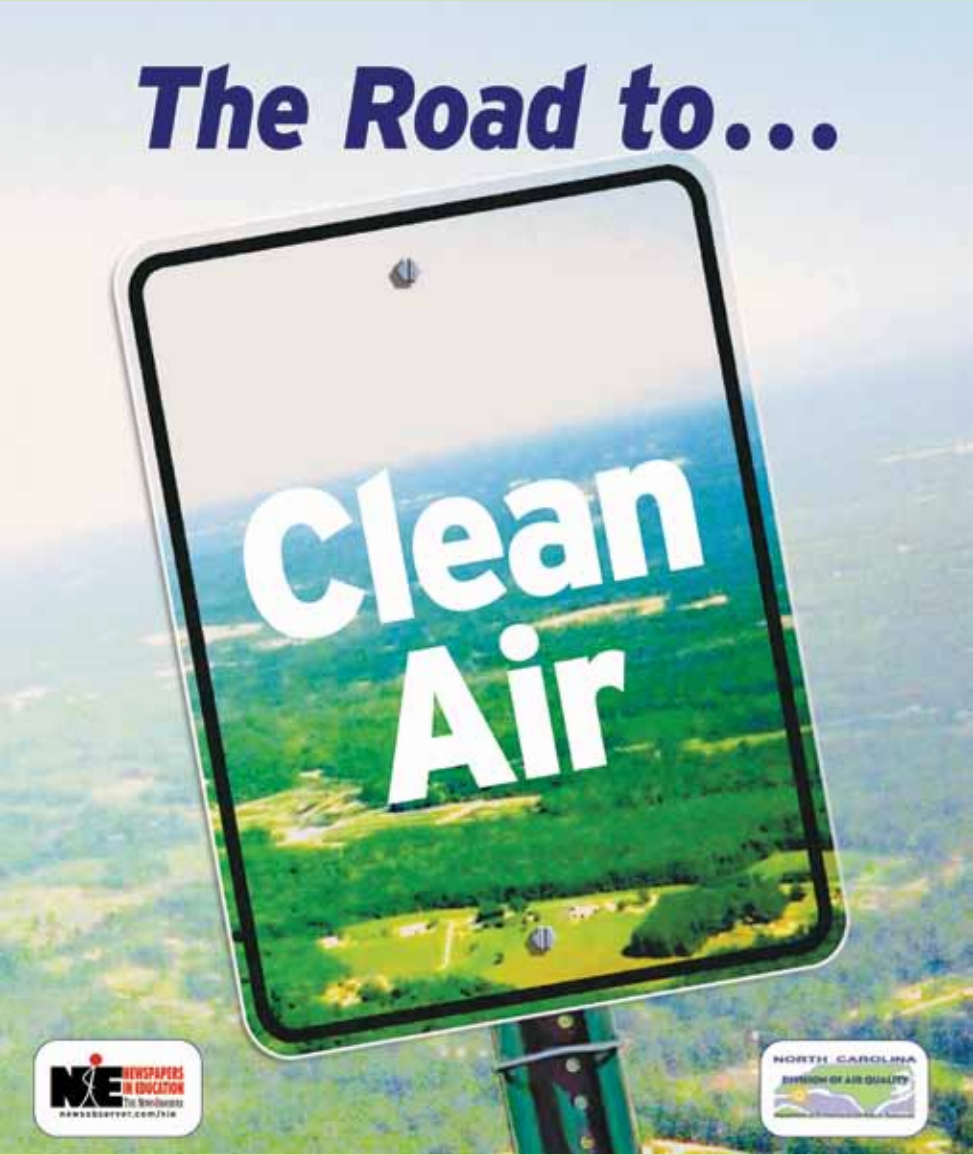
Students at the Asheboro High School Zoo School. N.C. Zoo photo.



Get on the Bus

One sixty-fourth of a cent doesn't sound like a lot, but it does a lot of good. The 1/64-cent per gallon tax on gasoline sold in North Carolina funds the Mobile Source Emissions Reduction Grants that are administered by the Division of Air Quality. Many of the funded projects have involved the retrofit of school buses with controls to curb diesel emissions so that school children can breathe cleaner air when riding on school buses. In fact, in 2004, it was decided that all of the grant money would go toward installing diesel oxidation catalysts on school buses, which reduces their emissions of soot and other pollutants that can form fine particles in the atmosphere. A fraction of a penny for ensuring better health of school children seems like a pretty good deal!

The Division of Air Quality has worked to retrofit school buses with diesel oxidation catalysts to help reduce air pollution. N.C. Division of Air Quality.



The Morning Paper

The Newspapers In Education (NIE) program is a worldwide effort that encourages teachers to use newspapers as supplemental text in their classrooms. Several of the divisions in the Department of Environment and Natural Resources have contributed to the NIE effort by developing newspaper inserts on various topics. Examples include The Road to Clean Air, Stormwater and You and North Carolina's Natural Network – How Do We Keep It Together? These educational resources have been distributed to teachers across North Carolina.

The N.C. Division of Air Quality helped create this Newspapers in Education insert.



The Sequoias Envirothon team (from L to R) - Lewis Braswell, Thomas Lineberger, Stephanie Taylor, Frankie, Johnson and Erin Lineberger. N.C. Division of Soil and Water Conservation.

Envirothon

The West Johnston High School Sequoias placed eighth out of 54 teams from the United States and Canada at the 2008 North American Canon Envirothon competition in Flagstaff, Ariz. The team qualified for the national competition in North Carolina's statewide Envirothon, which has five study areas: soils/land use, aquatic ecology, wildlife, forestry and current environmental issues. The West Johnston High School team scored the highest score in the history of the state Envirothon, with a score of 496 points out of a possible 500.

The Envirothon is North America's largest high school environmental education competition. The national competition has a test in each of the five subject areas, and also has an oral component in which the teams are given a real-life environmental problem. The team has to devise a plan to solve the problem, prepare posters, develop a budget and then give a 20-minute presentation on their proposed solution.

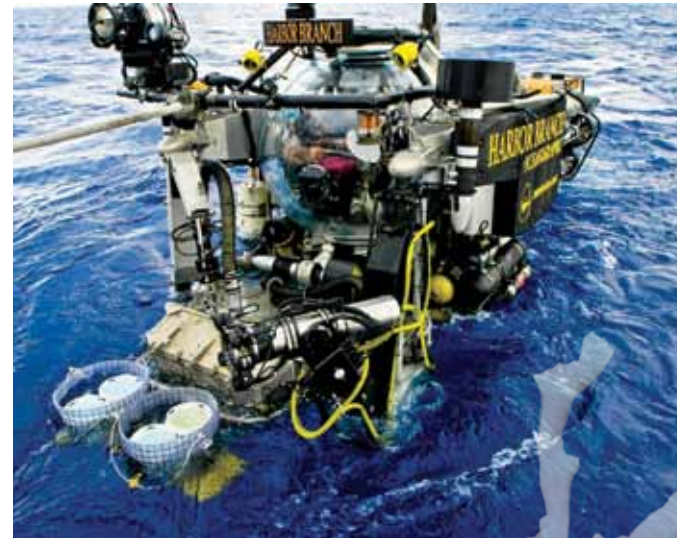
North Carolina is excited to be hosting the 2009 Canon Envirothon at the University of North Carolina at Asheville campus.

Life on the Edge

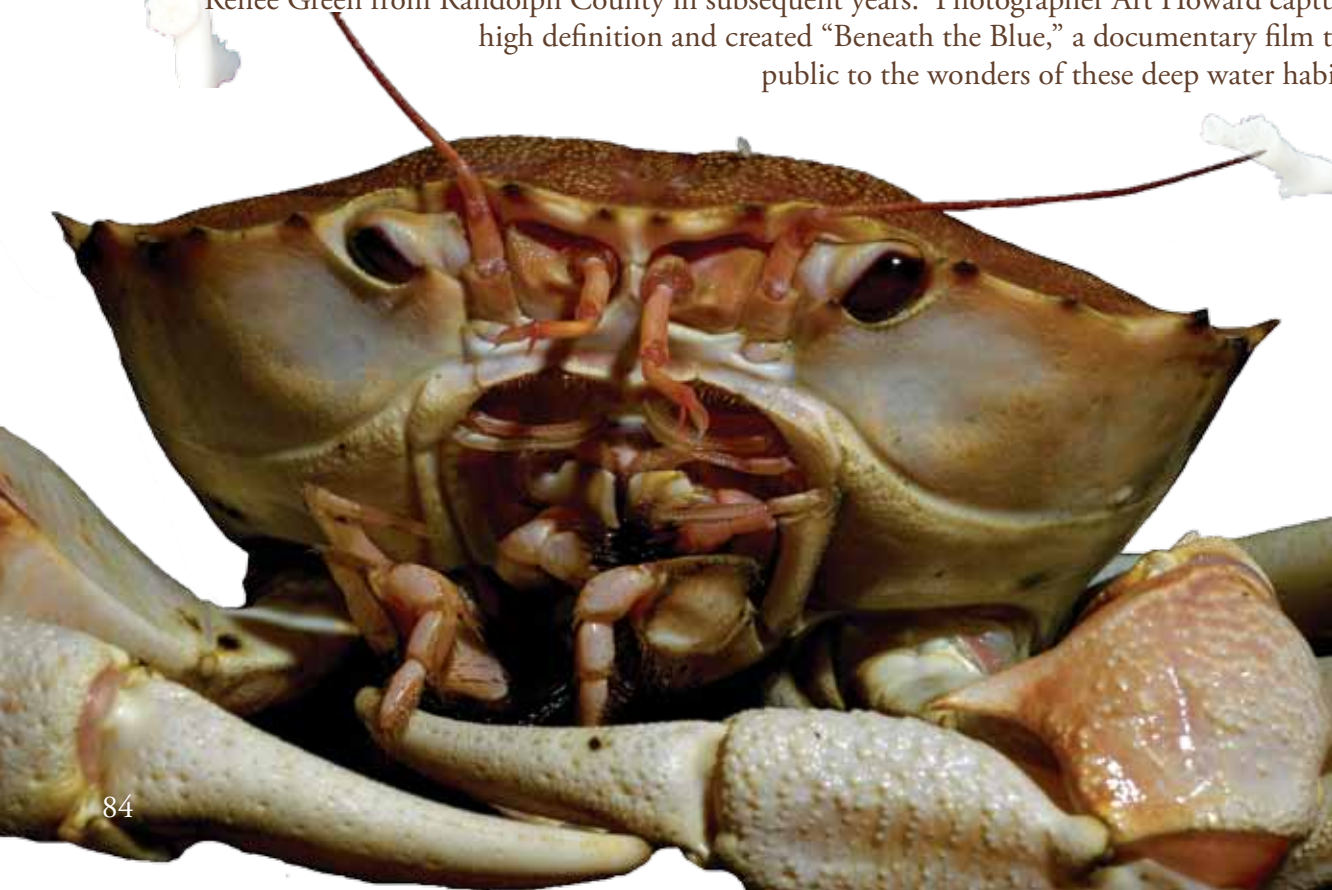
The Museum of Natural Sciences is known for the amazing professional development opportunities for teachers, but in 2002 it really went over the edge...the edge of the continental shelf. Museum educator Liz Baird and Alan Felker, a middle school teacher from Boone joined researchers from the University of North Carolina Wilmington, the National Marine Fisheries Service and the U.S. Geological Survey aboard a 204-foot vessel from the Harbor Branch Oceanographic Institute. Their mission, funded by the National Oceanic and Atmospheric Administration, was to explore the continental slope off the coast of North Carolina. From the ship, researchers used the Johnson Sea-Link II submersible to travel to the ocean floor and collect specimens.

North Carolina schoolchildren were able to follow along on the adventure and interact with the researchers from their classrooms. Team members posted their findings online, wrote and posted daily journal entries and answered questions from students posed via e-mail. Felker's students at Hardin Park School kept track of their teacher as the ship tried to hide from tropical storm Cristobal. Although the storm created some tense moments for Felker and his ocean-going colleagues, the reality of the chase made an ordinary mapping project come alive for his students. "They got pretty excited about that," said Felker.

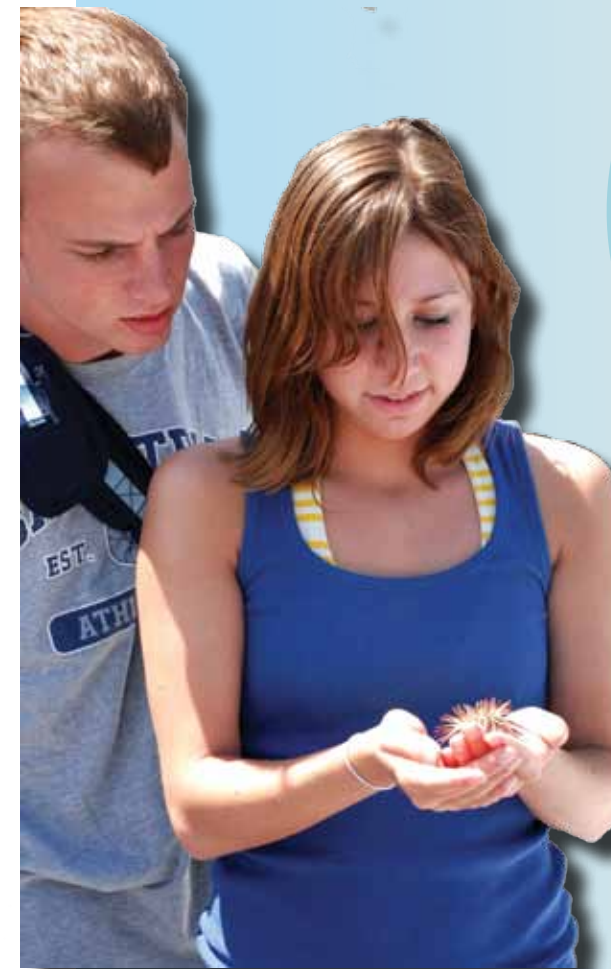
The museum took teachers Doni Angell from Burke County, Katie Cartwright from Carteret County and Renee Green from Randolph County in subsequent years. Photographer Art Howard captured these trips in high definition and created "Beneath the Blue," a documentary film to introduce the public to the wonders of these deep water habitats.



The four-person Johnson-Sea-Link submersible is lowered into the Gulf Stream off the stern of the Seward Johnson. Photo by Art Howard.



The researchers participating in the "Life on the Edge" missions were interested in documenting the life in the deep coral habitats, such as this Chaceon crab. Photo by Art Howard.



The N.C. Aquarium at Pine Knoll Shores encourages children to explore North Carolina's waterways. Claire Aubel, N.C. Aquariums.

No Child Left Inside

In September of 2008, the U.S. House passed the No Child Left Inside Act--the first major federal legislation that supports environmental education since 1990. This bill passed with bipartisan support, by a vote of 293 to 109. In anticipation of its passage into law, DENR and the N.C. Department of Public Instruction formed a partnership to develop an environmental literacy plan for the state. This literacy plan is a requirement of the legislation and could lead to substantial funding for environmental education.

Environmental Mentors

Beginning with the class of 2010, students who wish to graduate from a North Carolina public high school must complete a graduation project. The North Carolina Graduation Project includes four components: a research paper, a product, a portfolio and an oral presentation. In an effort to assist students interested in pursuing an environmental topic for their project, the Office of Environmental Education created a support page on its Web site with listings of individuals and organizations across the state that are willing to act as mentors on student projects, as well as possible project ideas.



Students can complete a project with an educator or aquarist at the N.C. Aquarium at Pine Knoll Shores. N.C. Aquariums.